packets associated with a call, extracting a set of parameters from the sequence of intercepted packets, and generating an estimated mean opinion score in dependence upon the set of parameters. The extracting step comprises: (i) generating a jitter parameter for each packet of the sequence of stored packets; (ii) generating a long term average jitter parameter (lt_jitter) for the stored packet in dependence upon the value of the jitter parameter (jitter) for the stored packet, the value of the jitter parameter for any preceding stored packets, and a predetermined adaptation rate (P) according to the equation: lt_jitter = (lt_jitter * P) + (abs (jitter) * (1 - P)); and (iii) generating a differential jitter parameter in dependence upon the jitter parameter for the stored packet and the long term average jitter parameter, and in which the set of parameters includes the differential jitter parameter.

Claim 9 recites an apparatus for assessing speech quality transmitted via a packet based telecommunications network. The apparatus comprises means for storing a sequence of intercepted packets associated with a call, means for extracting a set of parameters from the sequence of intercepted packets, and means for generating an estimated mean opinion score in dependence upon the set of parameters. The means for extracting comprises: (i) means for generating a jitter parameter for each intercepted packet of the sequence of stored intercepted packets; (ii) means for generating a long term average jitter parameter (lt_jitter) for the stored packet in dependence upon the value of the jitter parameter (jitter) for the stored intercepted packet, the value of the jitter parameter for any preceding stored intercepted packets and a predetermined adaptation rate (P) according to the equation: lt_jitter = (lt_jitter * P) + (abs(jitter) * (1 - P)); and (iii) means for generating a differential jitter parameter in dependence upon the jitter parameter for the stored intercepted packet and the long term average jitter parameter, and in which the set of parameters includes the differential jitter parameter.

Dechjaroen discloses that "to optimize buffer performance, it is necessary to adapt the buffer length of jitter buffer" (Dechjaroen, Page 48). Likewise, Scott '317 addresses the problem of providing optimal buffering so that, according to Scott '317, jitter is handled effectively without resorting to excessive buffering.

The fundamental alleged basis for the rejections of the pending claims is that it is known to assess packetized speech transmission quality by using a set of parameters that includes (among others) a jitter parameter generated in dependence upon a difference between the transmission time of a stored packet and the transmission time of a preceding stored

packet of the sequence; and a difference between the intercept time of the stored packet and the intercept time of the preceding stored packet. The applicant acknowledges that such is indeed known from many prior art references.

It is respectfully submitted, however, that the Office Action fails to state a *prima facie* case of obviousness, as the applied references, taken individually or in any combination, do not disclose or suggest all of the claimed elements.

For example, none of the applied references discloses or suggests generating a long term average jitter parameter for a stored packet in dependence upon (1) the value of the jitter parameter for the stored packet, (2) the value of the said jitter parameter for any preceding stored packets, and (3) a predetermined adaptation rate (P), and generating a differential jitter parameter in dependence upon the jitter parameter for the stored packet and the long term average jitter parameter, in which the set of parameters includes the differential jitter parameter, as recited in Claim 1. The Office Action contains a statement that Dechjaroen does not explicitly include means for determining a differential jitter parameter (April 10, 2009 Office Action, page 4, lines 17-18).

In relation to these claim elements, the U.S. PTO alleges that Dechjaroen discloses a formula for interarrival jitter on page 49, i.e., ($J = J + |D(i-1),i)| - J) / 16$) (April 10, 2009 Office Action, page 3, lines 14-15). This assumption is incorrect and does not suggest the recited claim elements. A disclosure of pure jitter and interarrival jitter, and that the "interarrival jitter is continuously computed and instantly reported" (Dechjaroen, page 50), does not support or suggest the claimed elements, for example, a "long term average jitter parameter", "predetermined adaptation rate", or "differential jitter parameter", and the interdependencies of those elements as claimed.

The U.S. PTO asserts that Scott '317 discloses, "...differential jitter (i.e., jitter variance) in dependence upon the jitter parameters and the long term jitter parameter (column 5, lines 22 - 25)", (April 10, 2009 Office Action, page 5, lines 1-2). In the portion relied upon, Scott '317 discloses that "average jitter is calculated using the sliding window array 730 and jitter variation is the absolute value of the difference between the present jitter and average jitter" (Scott '317, Col. 5, lines 22 - 25).

Disclosure of jitter variation based on actual and average values does not disclose or suggest generating a long term average jitter parameter for a stored packet in dependence upon the factors (1) - (3) noted above, and in which the set of parameters includes the

differential jitter parameter, as recited in Claim 1.

For analogous reasons, the applied references do not disclose or suggest the analogous features recited in claim 9 as discussed above.

The U.S. PTO acknowledges that Dechjaroen and Scott '317 do not teach determining an estimated mean opinion score in dependence upon the set of parameters (April 10, 2009 Office Action, page 5, lines 15-16).

The U.S. PTO asserts that Rix discloses estimating a mean opinion score in which jitter parameters are used to determine a mean opinion score, but any such disclosure in Rix would not overcome the shortcomings of Dechjaroen or Scott '317 as attempted to be applied to claim 1.

It is respectfully submitted that a *prima facie* case has not been established as the U.S. PTO has not shown that it would have been obvious to make the claimed invention as a whole. Further, even if there were support for the claimed elements (which there is not as discussed above) "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art" MPEP §2143.01, citing, *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007).

Scott '317 discloses that it is known to generate jitter statistics including jitter variation, average jitter and average jitter variation for the purposes of managing a jitter buffer size. Dechjaroen is also concerned with optimizing the performance of the buffer. For example, the cited equation on page 49 that the U.S. PTO refers to is used in the context of adapting the buffer length in order to optimize performance of the buffer, which is a similar application as shown in Scott '317. Both references seek to manage jitter buffer in real-time, in order to improve the quality of the transmission.

Applicants have found that the recited long term average jitter parameter and the differential jitter parameter are particularly effective parameters for determining and generating a mean opinion score relating to the voice quality of a VoIP call. None of the applied references, taken individually or in any combination, disclose any direct relationship between these elements and a mean opinion score. Rather, for example, Scott '317 discloses that an average jitter value and a differential jitter value can be used as part of calculations to adjust the size of a jitter buffer. Scott '317 does not disclose or suggest that the average jitter value and the differential jitter value can or should be used as a rating from which a mean opinion score can be determined. The other references are also silent in this regard. The U.S.

PTO also agrees, where it states that Dechjaroen and Scott '317 teach many of the features of the claimed invention, but the combination does not specify determining an estimated mean opinion score in dependence upon the set of parameters (April 10, 2009 Office Action, page 5, lines 12-16).

It is respectfully requested that the U.S. PTO reconsider and withdraw this rejection.

2. Claims 2 - 5 were rejected under 35 USC §103(a) as being unpatentable over Dechjaroen in view of Scott '317 and Rix, and further in view of U.S. Publication 2003/0018450 ("Carley '450"). Applicants respectfully traverse this rejection.

Carley '450 is relied on for alleged disclosure of composite variance analysis for network operation with packet based networks. Any such disclosure in Carley '450 would not overcome the shortcomings of Dechjaroen, Scott '317 and Rix as attempted to be applied against claim 1. Accordingly, it is respectfully requested that the United States Patent and Trademark Office reconsider and withdraw this rejection.

In light of all the foregoing, Applicants respectfully submit that claims 1 - 5 and 9 are patentable over the applied references. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Respectfully submitted,

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